



RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

BULLETIN BS-1.
File:-Receivers
Portable.
Date: 25/11/46
Page 1.

SUBJECT-

Model "BS"

3 Tube Superheterodyne Portable

Receiver.

For operation from:-

1.5 Volts "A" Battery
and
90 Volts "B" Battery

This Bulletin Contains:-

1. Technical Specifications.
2. General Description.
3. Alignment Procedure.
4. Circuit Diagrams.
5. Voltage Table.
6. Component Parts List.
7. Coil and IF. Transformer Connections.

SUBJECT-Technical Specifications-Receiver Type "BS"

Tube Complement:-

Type 1A7G Converter.
Type 1N5G IF. Amplifier.
Type 1D8GT Detector, AVC., 1st Audio and Output Amplifier.

Intermediate Frequency:-

455 Kc.

Tuning Range:-

540-1620 Kc.

Operating Voltages:-

"A" voltage 1.5 volts.
"B" voltage 90 volts (two 45 volt batteries connected in series)

Battery Consumption:-

"A" Battery 200 milliamps.
"B" Battery 8 milliamps (no signal).

Power Output:-

150 Milliwatts maximum.
90 Milliwatts undistorted.



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General Description:-

The Model "BS" is a three tube superheterodyne portable receiver having a sensitivity in the region of 100 microvolts for an output of 25 milliwatts with a load impedance of 12,000 ohms. Operation is from dry batteries which are assembled into the bottom of the carrying case.

The circuit is quite simple consisting of a loop aerial for signal pick up, converter, shunt fed oscillator, one IF. stage and a combined diode triode pentode tube type 1D8GT for diode detection, AVC. and audio amplification.

Full AVC. developed across the one megohm diode resistor (volume control) is applied to the converter stage. Coupled to the volume control shaft is a DP. ST. switch which open circuits both "A" and "B" batteries when switched off.

Back-bias is employed to eliminate the necessity for a "C" battery and to give a decrease in bias as the "B" battery voltage decreases.

Coupled to the loop aerial is a primary circuit which is connected internally to the rear top corner screws of the carrying case. An external aerial and earth can be attached to these screws to provide additional signal pick up in localities where insufficient signal pick up is obtained from the loop aerial.

SUBJECT--Alignment Procedure--Receiver Type "BS"

EQUIPMENT:--

Signal Generator.
Dummy Antenna.
.01MFD. Mica Capacitor.
200MMFD. Mica Capacitor.

Output Meter.
Alignment Tool.

ALIGNMENT CONDITIONS:--

Load Impedance -- 12,000 Ohms.
Output Level -- 25 Milliwatts.
Volume Control -- Maximum Volume (Fully clockwise).

IF. FREQUENCY:--455 Kc.

Operation	Frequency	Generator Connection	Dummy Antenna	Instructions
1.	455 Kcs.	To control grid of 1N5G tube.	.01MFD Mica capacitor in series with generator.	Leave grid clip on tube. Peak 2nd IF. transformer primary and secondary.
2.	455 Kcs.	To control grid of 1A7G tube.	.01MFD mica capacitor in series with generator.	Leave grid clip on tube. Gang plates full out. Peak 1st IF. transformer primary and secondary.
3.	1400 Kcs.	To antenna screw.	200MMFD mica capacitor in series with generator.	Turn condenser gang to 1400 Kc. Adjust oscillator trimmer for logging and peak loop trimmer condenser.



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SUBJECT-Alignment Procedure-Receiver Type "BS"

Operation	Frequency	Generator Connection	Dummy Antenna	Instructions
4.	600 Kcs.	To antenna screw.	200 MMFD mica capacitor in series with generator.	Turn condenser gang to 600 Kc. Adjust series padder for maximum output, rocking gang to and fro while adjusting
5.	Repeat operations 3 and 4.			

Tuning range 540-1620 Kc.



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SUBJECT Voltage Table Receiver Type "BS"

EQUIPMENT:-

Volt Meter: 1,000 ohm per volt meter with 0-10 and 0-250 volt scales.

Milliamp Meter: 0-50 and 0-500 milliamp scales.

CONDITIONS OF TEST:-

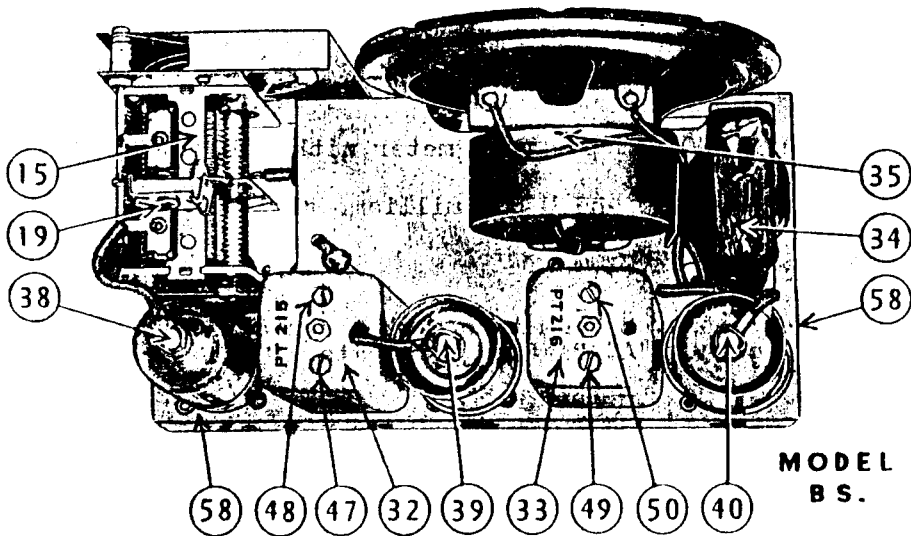
All voltages measured from tube socket contacts to chassis. "B" Battery 90 volts. "A" Battery 1.5 volts.

Tube	Fil.	Plate	Screen	Grid	Oscillator Plate
1A7G	1.4V.	82V.	43V.	-	55V.
1N5G	1.4V.	82V.	82V.	-	-
1D8GT	1.4V. } Triode Pentode	15V. 78V.	82V.	-8V.	-

"A" Battery consumption 200 milliamps.

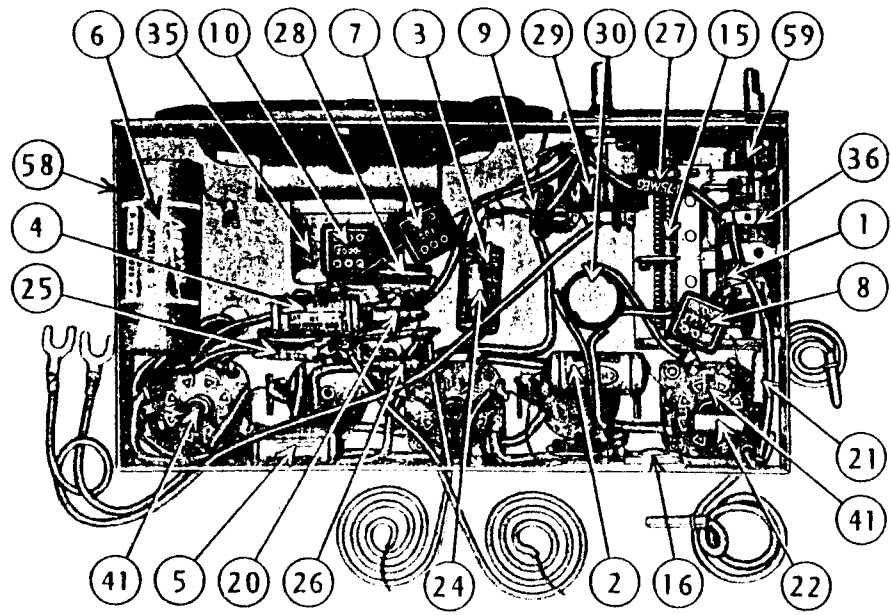
"B" Battery consumption 8 milliamps (no signal).

SUBJECT--Chassis Layout--Receiver Type "BS"



**MODEL
BS.**

Model "BS" Chassis Top View.



MODEL BS.

Model "BS" Chassis Bottom View.



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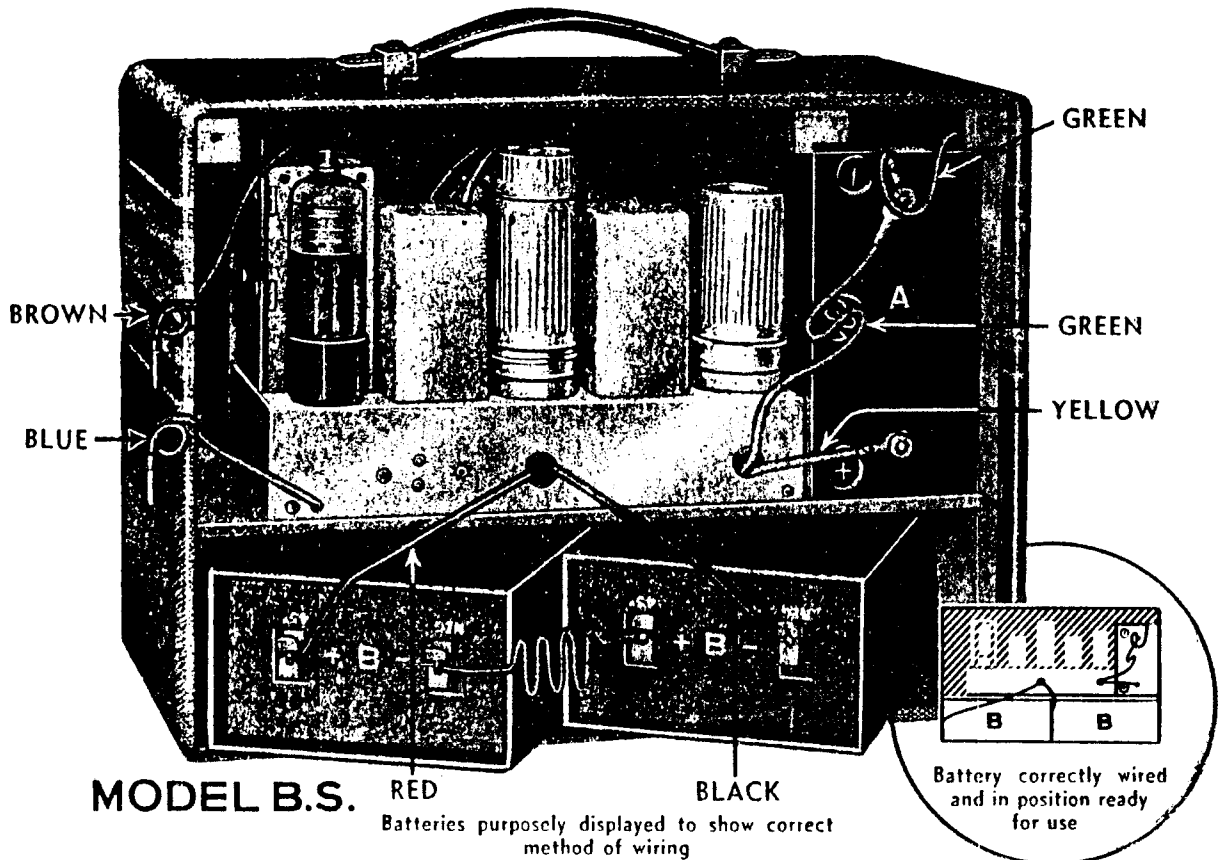
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SUBJECT-View of Cabinet Showing Positions of Batteries-Receiver Type "BS"



SUBJECT--Component Parts List--Receiver Type "BS"

<u>Circuit</u> <u>Number</u>	<u>Part Name</u>	<u>Tol.±</u>	<u>Rating</u>	<u>Part</u> <u>Number</u>
1.	.05MFD. Paper Condenser	20%	200V. DCW.	PC102
2.	.05MFD. Paper Condenser	20%	200V. DCW.	PC102
3.	.05MFD. Paper Condenser	20%	200V. DCW.	PC102
4.	.01MFD. Paper Condenser	20%	600V. DCW.	PC140
5.	.002MFD. Paper Condenser	20%	600V. DCW.	PC112
6.	8MFD. Electrolytic Condenser	20%	525PV.	PC262
7.	.001MFD. Mica Condenser	10%	1000VT.	PC108
8.	.001MFD. Mica Condenser	10%	1000VT.	PC108
9.	.0002MFD. Mica Condenser	10%	1000VT.	PC124
10.	.0002MFD. Mica Condenser	10%	1000VT.	PC124
11.	{Double Padder, Ceramic Base }			PC187
12.	{30-190MMFD. per section }			
13.	{Double padder, Ceramic Base }			PC187
14.	{30-190MMFD. per section }			
15.	2 Gang Tuning Condenser			PC253
16.	Series Padder 150-500MMFD.			PC164
17.	Trimmer Condenser 1.5-18MMFD.			PC250
18.				
19.	Trimmer Condenser 3-55MMFD.			PC224
20.	1 Megohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR246
21.	20,000 Ohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR166
22.	40,000 Ohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR251
23.	200,000 Ohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR255
24.	250,000 Ohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR249
25.	1.7 Megohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR248
26.	1,000 Ohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR252
27.	1.7 Megohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR248
28.	10 Megohm Carbon Resistor	10%	1 Watt	PR236
29.	1 Megohm Carbon Potentiometer with DP. ST. switch attached			{ PR235 changed to PR329 PT222
30.	Oscillator Coil			
31.				
32.	1st IF. Transformer			PT215
33.	2nd IF. Transformer			PT216
34.	Input Transformer, 12,000 Ohms Pri. Imped.			PT247
35.	Permag Speaker 6 inch			FM376
36.	Junction Strip			FM316
				changed to A103/509
37.				
38.	1A7G Tube			



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SUBJECT-Component Parts List Receiver Type "BS"

<u>Circuit</u> <u>Number</u>	<u>Part Name</u>	<u>Tol.±</u>	<u>Rating</u>	<u>Part</u> <u>Number</u>
39.	1N5G Tube			
40.	1D8GT Tube			
41.	Socket, 8 pin			{ FM277 changed to FM532
42.	Valve Shield			FM426
43.	Earth Contacts for Valve Shields			{ FM314 changed to 22/30C
44.	"B" Battery (Diamond Type P45)			FM430
45.	"B" Battery (Diamond Type P45)			FM430
46.	"A" Battery (Diamond Type Pl.5)			FM431
47.	No. 1 IF. Primary Adj. Screw			
48.	No. 1 IF. Secondary Adj. Screw			
49.	No. 2 IF. Primary Adj. Screw			
50.	No. 2 IF. Secondary Adj. Screw			
51.	Series Pad. Adj. Screw			
52.	Aerial Trimmer Adj. Screw			
53.	Oscillator Trimmer Adj. Screw			
54.	Lorenz Wound Loop Antenna (Loop antenna and 3 turn coupling loop only)			PT268
55.	Loading Coil for Loop Antenna			PT269
56.	Terminal Strip for Loop Antenna			A103/251
57.	2,000 Ohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR253
58.	Metal Chassis			-
59.	Dial Drive Spindle			1/207
	Dial Drive Spindle Nut			14/226
	Dial Drive Spindle Guide Bracket			18/89
	Dial Drum			A103/207
	Handle			12/251-1
	Handle Mt. Bracket, Assy.			A101/251-1
	Dial Cord 1 ft. 8 ins.			12/282
	Dial Reading (Astor)			18/251-1
	Dial Back Plate			4/207
	Dial Pulley			41/246
	Dial Pointer			5/207
	Cabinet (less back)			A104/251
	Cabinet Back			A102/251
	Speaker Baffle Board			7/251
	Celluloid Dial Escutcheon			4/251
	Wire Grille			5/251
	Control Knob (2)			22/81-4
	Dial Cord Spring			14/207
	Control Knob Spring Insert			86/71

SUBJECT-Coil and IF. Transformer Connections-Receiver Type "BS"

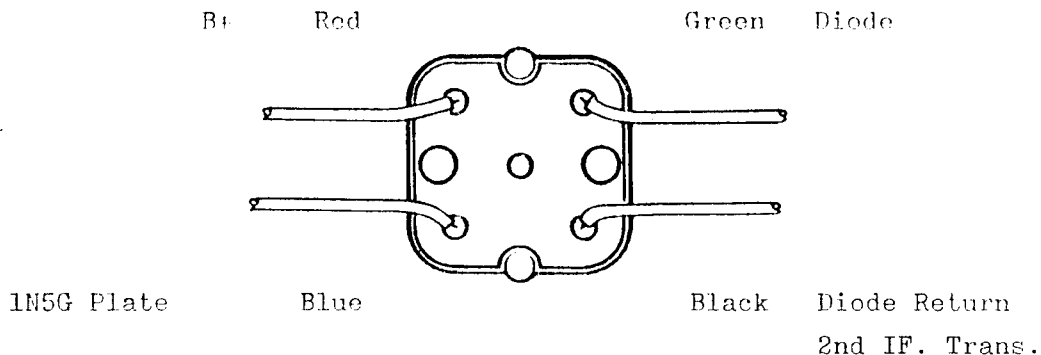
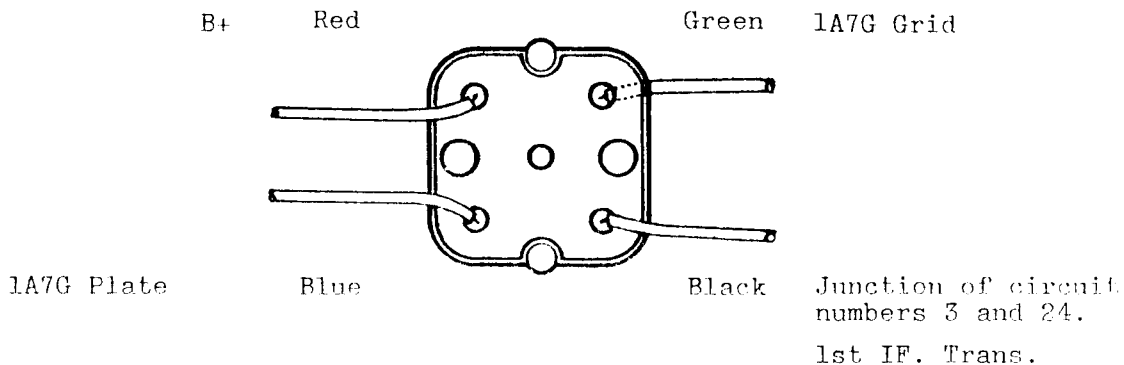
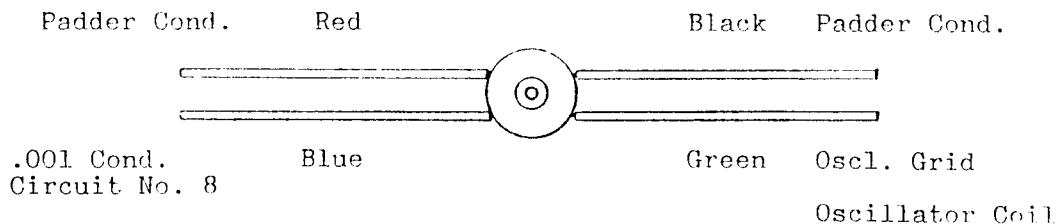
3 Turn Coupling Loop:-

Outside turn-Loading Coil
 Inside turn -Earth lug

Main Loop:-

Inside turn -Grid
 Outside turn-AVC.

Loop Antenna Coil





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SUBJECT-

Summary of Circuit

and

Circuit Component Changes

Since Beginning of Production 1/8/40 to 1/11/46.

A 1N5GT or 1P5GT tube may be used in place of the 1N5G tube.

A 1A7GT tube may be used in place of the 1A7G tube.

A 15MMFD. wire wound capacity part number PC196 is used on some production runs to improve the peaking position of the oscillator trimmer condenser.